

Appl. No. 10/648,290
Amendment dated: November 3, 2004
Reply to OA of: August 5, 2004

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1-16 (canceled).

17(new). A heating plate crystallization method for forming a poly-silicon thin-film transistor comprising:

forming a glass substrate

forming a amorphous Si layer on the substrate; and

depositing a heating plate layer on the amorphous Si layer;

forming a heating plate area by photo lithographically and etching process; heating plate area has an excellent absorption rate to infrared radiation and has high thermal stability;

exposing the heating plate area to infrared radiation which is absorbed by the heating plate area which transfers energy indirectly to the amorphous Si layer by thermal conduction so that the amorphous Si layer is rapidly crystallized to form a poly-Si layer ; and

performing a pulsed rapid thermal annealing process (PRTP) with infrared radiation to instantly and selectively heat without breaking the glass substrate while the process temperature of the heating plate area is greater than 700°C.

18(new). The heating plate crystallization method of claim 17, wherein the substrate is glass.

19(new). The heating plate crystallization method of claim 17, wherein a thin oxide layer is deposited between the heating plate area and the amorphous Si layer to stop, during the pulsed rapid thermal annealing process, any high thermal diffusion

between the heating plate area and the amorphous Si layer so as to effectively avoid metal pollution in TFT device channel area.

20(new). The heating plate crystallization method of claim 19, wherein the heating plate layer is made of MoW with thermal stability.

21(new). The heating plate crystallization method of claim 19, wherein the heating plate layer is made of Cr with thermal stability.

22(new). The heating plate crystallization method of claim 19, wherein the heating plate layer is made of W with thermal stability.

23(new). A heating plate crystallization poly-silicon thin-film transistor comprising:

- a glass substrate;

- a amorphous Si layer on the substrate; and

- a heating plate layer on the amorphous Si layer having a heating plate area pattern for absorbing infrared radiation and wherein the heating plate area has a good absorption rate to infrared radiation and has a high thermal stability;

the heating plate area is used for absorbing the infrared radiation and transferring heat without breaking the glass substrate while the process temperature of the heating plate area is greater than 700°C.

24(new). The heating plate crystallization poly-silicon thin-film transistor of claim 23, wherein the substrate is glass.

25(new). The heating plate crystallization poly-silicon thin-film transistor of claim 23, wherein a thin oxide layer is between the heating plate area and the amorphous Si layer in an amount to stop, during a pulsed rapid thermal annealing process, high

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thermal diffusion between the heating plate area and the amorphous Si layer so as to effectively avoid metal pollution in TFT device channel area.

26(new). The heating plate crystallization of claim 25, wherein the heating plate layer is made of MoW with thermal stability.

27(new). The heating plate crystallization method of claim 25, wherein the heating plate layer is made of Cr with thermal stability.

28(new). The heating plate crystallization method of claim 25, wherein the heating plate layer is made of W with thermal stability.